

A handwritten signature consisting of a large, irregular oval at the top, followed by a stylized lowercase 'm' or 'n', and a smaller oval at the bottom.A handwritten mark resembling a large, open circle or a stylized letter 'g'.

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C-056146

Appendix IX. Fisheries Cumulative Impact Tables

This appendix contains tables referenced in the "Fisheries" section of Chapter 5, "Cumulative Impacts."

IX-2

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C-056148

Table A. Sacramento River Diversion Index During May of
Four Water-Year Types

Year Type	Year	
	1985	2020
Critically dry	.81	.79
Dry	.86	.85
Below normal	.87	.88
Above normal	.81	.81

Note: Critically dry (1934), dry (1964), below normal (1957), and above normal (1954).

Table B. Relative Sacramento River Flow
During Selected
Water-Year Types for 1985 Base and Alternative 1

Month	Critical		Dry		Below Normal		Above Normal	
	1985	No-Action	1985	No-Action	1985	No-Action	1985	No-Action
January	0.48	0.38	0.64	0.57	0.57	0.40	0.72	0.70
February	0.27	0.40	0.61	0.62	0.83	0.80	0.87	0.87
March	0.53	0.60	0.49	0.49	0.88	0.81	0.89	0.80
April	0.65	0.53	0.60	0.63	0.48	0.42	0.85	0.81
May	0.76	0.66	0.70	0.75	0.84	0.77	0.88	0.82
June	0.69	0.67	0.65	0.73	0.79	0.74	0.80	0.76
July	0.72	0.69	0.56	0.56	0.66	0.55	0.64	0.60
August	0.69	0.66	0.51	0.52	0.49	0.44	0.49	0.46
September	0.70	0.77	0.53	0.54	0.50	0.45	0.55	0.48
October	0.65	0.74	0.44	0.46	0.57	0.42	0.57	0.43
November	0.41	0.44	0.46	0.58	0.75	0.66	0.68	0.59
December	0.38	0.37	0.91	0.89	0.68	0.57	0.65	0.62

Table C. San Joaquin River Diversion Index During May of
Four Water Year Types

Year Type	Year	
	1985	No-Action
Critically dry	.09	.10
Dry	.21	.14
Below normal	.17	.08
Above normal	.06	.09

Note: Critically dry (1934), dry (1964), below normal (1957), and above normal (1954).

Table D. Relative San Joaquin River Flow
During Selected
Water Year Types for 1985 and No-Action

Month	Critical		Dry		Below Normal		Above Normal	
	1985	No-Action	1985	No-Action	1985	No-Action	1985	No-Action
January	0.17	0.15	0.20	0.18	0.30	0.26	0.15	0.18
February	0.24	0.25	0.20	0.21	0.37	0.33	0.20	0.24
March	0.21	0.22	0.16	0.17	0.31	0.20	0.28	0.14
April	0.38	0.36	0.20	0.16	0.23	0.15	0.29	0.22
May	0.33	0.28	0.25	0.32	0.34	0.21	0.52	0.34
June	0.21	0.26	0.21	0.26	0.35	0.20	0.38	0.24
July	0.23	0.19	0.14	0.15	0.18	0.10	0.16	0.12
August	0.23	0.19	0.13	0.13	0.13	0.09	0.15	0.12
September	0.31	0.43	0.18	0.20	0.19	0.15	0.23	0.19
October	0.35	0.44	0.22	0.20	0.18	0.16	0.29	0.21
November	0.21	0.24	0.15	0.16	0.22	0.18	0.19	0.17
December	0.14	0.20	0.20	0.20	0.22	0.21	0.15	0.14

Table E. Striped Bass Diversion Index During May
of Four Water Year Types

Year Type	Year	
	1985	No-Action
Critically dry	.79	.73
Dry	.76	.79
Below normal	.87	.83
Above normal	.88	.84

Note: Critically dry (1934), dry (1964), below normal (1957), and above normal (1954).

Table F. Frequency of Average Monthly Delta Outflow less than 4,000 cfs over the 56-Year Period of Record

Month	Year	
	1985	No-Action
October	13	7
November	1	0
December	2	1
January	0	0
February	0	0
March	2	1
April	1	2
May	0	0
June	7	5
July	2	8
August	30	34
September	10	7

Table G. The Percent Difference in Export Between 1985
and No-Action for Four Water Year Types

Month	Critical	Dry	Below Normal	Above Normal
January	11	7	6	0
February	4	0	8	4
March	4	2	31	42
April	15	36	28	20
May	43	-14	2	09
June	12	-14	3	-2
July	4	-11	52	17
August	4	-10	21	7
September	-18	2	22	26
October	-24	5	5	41
November	-9	-1	25	11
December	-20	8	8	8

Table H. Sacramento River Flow Index for Chinook Salmon

Month	No-Action	Alternatives							
		1B	2	3	4A/B	4C/D	5	6	7
May	.5	.4	.5	.5	.5	.5	.4	.5	.5
June	.4	.3	.4	.4	.4	.4	.4	.4	.4

Table I. Sacramento River Diversion Index During May
of Four Water Year Types

Year Type	No-Action	Alternatives							
		1B	2	3	4A/B	4C/D	5	6	7
Critically dry	.79	.79	.80	.80	.79	na	.80	.80	.79
Dry	.85	.84	.85	.84	.84	na	.85	.84	.85
Below normal	.85	.84	.85	.84	.85	na	.85	.85	.85
Above normal	.81	.79	.81	.81	.80	na	.82	.83	.82

Note: Critically dry (1934), dry (1964), below normal (1957), and above normal (1954).

Table J. Relative Sacramento River Flow
During Selected
Water Year Types for All Alternatives

Month	No-Action	1B	Alt2	Alt3	Alt4A/B	Alt4C/D	Alt5	Alt6	Alt7
<u>Critically Dry Year</u>									
January	0.38	0.50	0.37	0.37	0.37	na	0.42	0.40	0.44
February	0.40	0.43	0.19	0.35	0.10	na	0.44	0.18	0.45
March	0.60	0.60	0.50	0.58	0.24	na	0.61	0.48	0.61
April	0.53	0.55	0.67	0.66	0.69	na	0.59	0.68	0.54
May	0.66	0.66	0.66	0.65	0.68	na	0.67	0.66	0.66
June	0.67	0.68	0.67	0.67	0.68	na	0.67	0.69	0.69
July	0.69	0.56	0.69	0.67	0.51	na	0.69	0.67	0.68
August	0.66	0.47	0.62	0.65	0.43	na	0.66	0.54	0.66
September	0.77	0.77	0.77	0.74	0.77	na	0.77	0.75	0.77
October	0.74	0.44	0.53	0.65	0.51	na	0.80	0.54	0.74
November	0.44	0.30	0.42	0.42	0.50	na	0.42	0.43	0.42
December	0.37	0.49	0.49	0.49	0.39	na	0.51	0.50	0.37
<u>Dry Year</u>									
January	0.57	0.58	0.49	0.57	0.49	na	0.64	0.50	0.58
February	0.62	0.61	0.56	0.62	0.48	na	0.66	0.62	0.62
March	0.49	0.49	0.49	0.50	0.37	na	0.49	0.48	0.49
April	0.53	0.53	0.53	0.53	0.54	na	0.50	0.54	0.53
May	0.75	0.72	0.75	0.75	0.55	na	0.78	0.63	0.77
June	0.73	0.62	0.72	0.72	0.53	na	0.75	0.59	0.77
July	0.56	0.48	0.56	0.58	0.41	na	0.54	0.54	0.54
August	0.52	0.40	0.52	0.53	0.20	na	0.52	0.44	0.52
September	0.54	0.42	0.54	0.55	0.23	na	0.53	0.45	0.53
October	0.46	0.35	0.46	0.46	0.56	na	0.46	0.54	0.46
November	0.58	0.33	0.38	0.39	0.55	na	0.44	0.50	0.53
December	0.89	0.84	0.88	0.87	0.91	na	0.89	0.89	0.89

Table J. (Continued)

Month	No-Action	1B	Alt2	Alt3	Alt4A/B	Alt4C/D	Alt5	Alt6	Alt7
<u>Below Normal Year</u>									
January	0.40	0.45	0.38	0.40	0.43	na	0.53	0.39	0.43
February	0.80	0.66	0.75	0.79	0.72	na	0.76	0.75	0.80
March	0.81	0.78	0.81	0.81	0.80	na	0.81	0.81	0.81
April	0.42	0.42	0.42	0.42	0.39	na	0.42	0.42	0.41
May	0.77	0.76	0.76	0.75	0.78	na	0.77	0.77	0.77
June	0.74	0.72	0.73	0.74	0.71	na	0.72	0.70	0.72
July	0.55	0.49	0.55	0.57	0.61	na	0.55	0.59	0.55
August	0.44	0.33	0.44	0.45	0.36	na	0.35	0.43	0.44
September	0.45	0.34	0.45	0.47	0.26	na	0.45	0.42	0.45
October	0.42	0.40	0.30	0.31	0.28	na	0.51	0.31	0.51
November	0.66	0.55	0.65	0.61	0.64	na	0.64	0.58	0.64
December	0.57	0.56	0.57	0.57	0.57	na	0.57	0.56	0.56
<u>Above-Normal Year</u>									
January	0.70	0.56	0.60	0.66	0.60	na	0.70	0.61	0.67
February	0.87	0.85	0.85	0.87	0.84	na	0.87	0.85	0.87
March	0.80	0.77	0.79	0.80	0.79	na	0.80	0.80	0.81
April	0.81	0.79	0.81	0.80	0.79	na	0.81	0.79	0.81
May	0.82	0.79	0.81	0.81	0.78	na	0.81	0.78	0.81
June	0.76	0.74	0.76	0.77	0.72	na	0.76	0.74	0.76
July	0.60	0.53	0.60	0.61	0.62	na	0.56	0.62	0.60
August	0.46	0.34	0.46	0.47	0.33	na	0.46	0.44	0.46
September	0.48	0.36	0.48	0.49	0.22	na	0.48	0.43	0.48
October	0.43	0.36	0.43	0.43	0.30	na	0.43	0.42	0.43
November	0.59	0.37	0.54	0.54	0.52	na	0.64	0.39	0.64
December	0.62	0.67	0.60	0.59	0.60	na	0.62	0.59	0.60

Table K. San Joaquin River Diversion Index During May of
Four Water Year Types

Year Type	No-Action	Alternatives							
		1B	2	3	4A/B	4C/D	5	6	7
Critically dry	.10	.10	.10	.10	.10	na	.10	.10	.10
Dry	.14	.14	.14	.14	.13	na	.14	.13	.14
Below normal	.08	.09	.08	.08	.09	na	.08	.08	.08
Above normal	.09	.08	.09	.09	.05	na	.09	.08	.09

Note: Critically dry (1983), dry (1964), below normal (1957), and above usual (1954).

Table L. Relative San Joaquin River Flow
During Selected Water
Year Types for All Alternatives

Month	No-Action	1B	Alt2	Alt3	Alt4A/B	Alt4C/D	Alt5	Alt6	Alt7
<u>Critically Dry Year</u>									
January	0.15	0.17	0.15	0.15	0.15	na	0.15	0.15	0.15
February	0.25	0.29	0.25	0.29	0.23	na	0.25	0.23	0.25
March	0.22	0.23	0.21	0.23	0.15	na	0.22	0.16	0.22
April	0.36	0.36	0.44	0.42	0.45	na	0.36	0.44	0.36
May	0.28	0.28	0.28	0.27	0.29	na	0.28	0.28	0.28
June	0.26	0.27	0.26	0.26	0.27	na	0.26	0.27	0.26
July	0.19	0.15	0.19	0.18	0.13	na	0.19	0.18	0.19
August	0.19	0.13	0.17	0.18	0.12	na	0.19	0.12	0.19
September	0.43	0.44	0.43	0.40	0.44	na	0.43	0.41	0.43
October	0.44	0.21	0.23	0.35	0.22	na	0.44	0.25	0.44
November	0.24	0.20	0.24	0.24	0.27	na	0.24	0.24	0.24
December	0.20	0.20	0.20	0.20	0.17	na	0.20	0.20	0.20
<u>Dry Year</u>									
January	0.18	0.18	0.16	0.19	0.16	na	0.18	0.16	0.18
February	0.21	0.19	0.17	0.21	0.15	na	0.21	0.21	0.21
March	0.17	0.18	0.17	0.17	0.14	na	0.17	0.16	0.17
April	0.16	0.16	0.16	0.16	0.16	na	0.16	0.16	0.16
May	0.32	0.30	0.32	0.32	0.21	na	0.32	0.21	0.32
June	0.26	0.21	0.26	0.26	0.17	na	0.26	0.17	0.26
July	0.15	0.13	0.15	0.15	0.12	na	0.15	0.12	0.15
August	0.13	0.11	0.13	0.13	0.08	na	0.13	0.08	0.13
September	0.20	0.15	0.20	0.20	0.13	na	0.20	0.13	0.20
October	0.20	0.16	0.20	0.20	0.24	na	0.20	0.26	0.20
November	0.16	0.13	0.16	0.16	0.21	na	0.16	0.19	0.16
December	0.20	0.20	0.20	0.20	0.26	na	0.20	0.26	0.20

Table L. (Continued)

Month	No-Action	1B	Alt2	Alt3	Alt4A/B	Alt4C/D	Alt5	Alt6	Alt7
<u>Below Normal Year</u>									
January	0.26	0.25	0.22	0.26	0.24	na	0.26	0.25	0.26
February	0.33	0.32	0.32	0.33	0.29	na	0.33	0.31	0.33
March	0.20	0.19	0.20	0.20	0.19	na	0.20	0.20	0.20
April	0.15	0.16	0.16	0.15	0.15	na	0.15	0.15	0.15
May	0.21	0.22	0.21	0.21	0.22	na	0.21	0.22	0.21
June	0.20	0.20	0.20	0.20	0.19	na	0.20	0.18	0.20
July	0.10	0.09	0.10	0.10	0.12	na	0.10	0.12	0.10
August	0.09	0.07	0.09	0.09	0.08	na	0.09	0.08	0.09
September	0.15	0.11	0.15	0.15	0.12	na	0.15	0.12	0.15
October	0.16	0.15	0.16	0.16	0.15	na	0.16	0.16	0.16
November	0.18	0.17	0.18	0.18	0.17	na	0.18	0.18	0.18
December	0.21	0.21	0.21	0.21	0.21	na	0.21	0.21	0.21
<u>Above Normal Year</u>									
January	0.18	0.16	0.16	0.19	0.16	na	0.18	0.16	0.18
February	0.14	0.23	0.22	0.24	0.21	na	0.24	0.22	0.24
March	0.14	0.14	0.14	0.14	0.13	na	0.14	0.14	0.14
April	0.22	0.20	0.22	0.22	0.20	na	0.22	0.20	0.22
May	0.34	0.32	0.34	0.34	0.30	na	0.34	0.30	0.34
June	0.24	0.22	0.24	0.24	0.20	na	0.24	0.20	0.24
July	0.12	0.11	0.12	0.12	0.12	na	0.12	0.12	0.12
August	0.12	0.09	0.12	0.12	0.10	na	0.12	0.10	0.12
September	0.19	0.13	0.19	0.19	0.14	na	0.19	0.14	0.19
October	0.21	0.18	0.21	0.21	0.18	na	0.21	0.18	0.21
November	0.17	0.17	0.17	0.18	0.17	na	0.17	0.18	0.17
December	0.14	0.17	0.14	0.14	0.14	na	0.14	0.14	0.14

Table M. Striped Bass Diversion Index During May of
Four Water Year Types

Year Type	No-Action	Alternatives							
		1B	2	3	4A/B	4C/D	5	6	7
Critically dry	.73	.74	.73	.73	.73	na	.74	.73	.73
Dry	.79	.78	.79	.79	.71	na	.81	.77	.80
Below normal	.83	.82	.82	.82	.83	na	.83	.83	.83
Above normal	.84	.82	.84	.84	.82	na	.84	.82	.84

Note: Critically dry (1934), dry (1964), below normal (1957), and above normal (1954).

Table N. American Shad Relative Abundance Index for
the 56-Year Period of Record

Year Type	No-Action	Alternatives							
		1B	2	3	4A/B	4C/D	5	6	7
Index	.32	.31	.31	.30	.31	.31	.32	.32	.32

Table O. Frequency of Average Monthly Delta Outflow
Less Than 4,000 CFS over the 56-Year Period of Record

Month	No-Action	Alternatives							
		1B	2	3	4A/B	4C/D	5	6	7
October	7	8	8	8	7	na	9	8	6
November	0	1	0	0	0	na	0	1	0
December	1	0	0	0	0	na	0	0	3
January	0	0	0	0	0	na	0	0	0
February	0	0	0	1	1	na	0	1	0
March	1	2	1	2	0	na	1	0	1
April	2	2	1	1	1	na	1	2	2
May	0	0	0	0	0	na	0	0	0
June	5	5	5	5	7	na	5	7	3
July	8	5	6	5	2	na	10	2	13
August	34	37	32	31	16	na	41	14	31
September	7	5	5	5	5	na	8	8	3

Table P. The Percent Difference in Export Between No-Action
and All Other Alternatives for Four Water Year Types

Month	Alt1B	Alt2	Alt3	Alt4A/B	Alt4C/D	Alt5	Alt6	Alt7
<u>Critically Dry Year</u>								
January	-13	0	0	0	5	0	0	0
February	-16	0	-14	9	38	0	6	0
March	-6	5	-8	49	76	0	37	0
April	-2	-18	-16	-20	-12	0	-20	0
May	0	0	4	-3	18	0	1	0
June	-4	0	2	-3	25	0	-4	0
July	29	0	8	47	29	0	11	0
August	51	16	7	66	65	0	69	0
September	-3	0	8	-2	44	0	5	0
October	108	93	28	101	132	0	79	0
November	22	0	0	-11	10	0	-1	0
December	2	2	2	20	10	0	2	0
<u>Dry Year</u>								
January	2	16	-1	15	55	0	15	0
February	11	23	0	40	35	0	-1	0
March	-1	0	0	21	27	0	11	0
April	-2	0	0	-1	13	0	-2	0
May	8	0	0	55	-6	0	55	0
June	26	0	0	49	-8	0	49	0
July	16	0	0	28	-27	0	28	0
August	18	0	1	57	-25	0	57	0
September	27	0	0	54	31	0	53	0
October	23	0	0	-16	43	0	-24	0
November	22	1	1	-22	38	0	-15	0
December	-1	0	0	-21	35	0	-22	0

Table P. (Continued)

Month	Alt1B	Alt2	Alt3	Alt4A/B	Alt4C/D	Alt5	Alt6	Alt7
<u>Below Normal Year</u>								
January	3	15	0	8	48	0	2	0
February	3	4	0	13	18	0	8	0
March	4	1	0	6	14	0	2	0
April	-2	-2	0	2	8	0	1	0
May	-4	0	0	-4	114	0	-4	0
June	-1	0	0	6	24	0	12	0
July	11	0	0	-12	29	0	-12	0
August	24	0	0	12	29	0	12	0
September	39	0	0	30	32	0	29	0
October	2	0	0	2	21	0	-1	0
November	1	0	0	3	-23	0	-1	0
December	-1	0	0	-1	1	0	-1	0
<u>Above Normal Year</u>								
January	10	11	-4	10	12	0	10	0
February	6	13	0	15	34	0	12	0
March	4	4	0	6	60	0	4	0
April	5	0	0	8	51	0	7	0
May	6	0	0	12	37	0	12	0
June	9	0	0	15	27	0	15	0
July	12	0	0	-5	17	0	-5	0
August	35	0	1	21	17	0	21	0
September	46	0	0	39	17	0	38	0
October	17	0	0	18	11	0	14	0
November	3	0	-6	4	4	0	-6	0
December	-19	0	0	-1	1	0	-1	0

IX-18

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